

Section 9-3: Divide by a Monomial

By the end of this lesson, you should be able to answer:

- How do you divide monomials and polynomials by monomials?

Where you might see this in the real world:

- Landscaping, retail, interior design, geography, modeling

Today we will be using the quotient rule for exponents, which is as follows:

$$\frac{a^m}{a^n} = a^{m-n}$$

This rule tells us that if we divide powers with the same bases, all we do is subtract the exponent in the denominator from the exponent in the numerator. Just as we did with multiplying by monomials, we want to work with the numbers first, then alphabetically through the variables.

Example 1: Simplify.

a. $\frac{14y^2}{7y}$

b. $\frac{9vw}{15v}$

c. $\frac{80x^4y^5}{20x^2y^2}$

There will be times where we will take a polynomial that is not a monomial and divide it by monomial. We can break this up just as we would break up a fraction. Each monomial in the polynomial in the numerator can be divided individually by the monomial in the denominator.

Example 2: Simplify.

a. $\frac{2x^2 - 4x}{2x}$

b. $\frac{45t^4 - 30t^2 + 15t}{3}$

Problem Set:

“There is no expedient to which a man will not go to avoid the labor of thinking.” –
Thomas A. Edison